

Notice of Allowability

Application No.

10/531,434

Examiner

Felisa C. Hiteshew

Applicant(s)

KURITA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the application filed on 02/17/2006.
2. ☒ The allowed claim(s) is/are 1-14.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 04/15/2005
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.


Felisa Hiteshew
Primary Patent Examiner
AU 1722

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The Information Disclosure Statement under 37 C.F.R. 1.97 has been received and reviewed. However, the information disclosure is not deemed to be pertinent over the prior art of record.

Allowable Subject Matter

2. Claims 1-14 are allowed.
3. The following is an examiner's statement of reasons for allowance: The most relevant prior art of reference is that of U.S. Patent No. 7,074,271 (Furukawa, et al). However, it does not teach nor fairly suggest singularly or in any combination thereof

A method for measuring the point defect distribution of a silicon single crystal ingot, comprising

- (a1) a step of preparing a sample for measurement including regions [V], [Pv], [Pi] and [I] by cutting to an axial direction a silicon single crystal ingot which is pulled up by changing a pulling-up speed from silicon melt so as to include the central axis of the single crystal ingot,
- (b1) a step of preparing a first sample and a second sample by dividing the sample for measurement into two so as to be symmetrical against the central axis of the ingot,
- (c1) a step of coating a first transition metal solution dissolving a first transition metal at a concentration of 1 to 1000 ppm on the surface of the first sample to stain the sample with the metal,
- (d1) a step of coating a second transition metal solution dissolving a second transition metal different from the first transition metal at a concentration of 1 to 1000 ppm on the surface of the second sample to stain the sample with the metal,
- (e1) a diffusion thermal treatment step of thermally treating the first and second samples stained with the metals at 600°C to 1150°C for 0.5 hour to 30 hours under argon, nitrogen, oxygen, hydrogen or mixed gas atmosphere thereof and diffusing the first and second transition metals which are respectively coated on the surface of the first and second samples into the inside of the samples,

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(f1) a step of respectively measuring recombination lifetimes in the whole of the first and second samples which are thermally treated,

(g1) a step of overlapping the vertical measurement of the first sample of the step (f1) on the vertical measurement of the second sample, and

(h1) a step of respectively specifying the boundary between the regions [Pi] and [I], and the boundary between the regions [V] and [Pv] from the measurement result of the step (g1).

Provided that the region [V] is a region having defects where the vacancy type point defect is dominant and excessive vacancies are agglomerated, the region [Pv] is a region having defects where the vacancy type point defect is dominant and vacancies are not agglomerated, the region [Pi] is a region having defects where the interstitial silicon type point defect is dominant and interstitial silicons are not agglomerated, and the region [I] is a region having defects where the interstitial silicon type point defect is dominant and interstitial silicons are agglomerated.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of

Reasons for Allowance." **Conclusion**


4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTOL-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Felisa Hiteshew whose telephone number is (571) 272-1463. The examiner can normally be reached on Mondays through Thursday from 5:30 AM to 4:00 PM with Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta, can be reached on (571) 272-1316. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-1463.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866- 217-9197 (toll-free).


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AU/798